

CLAIMS

What is claimed is:

1. A method of passivating an integrated circuit (IC), the method comprising:
 - forming an insulating layer on said IC;
 - forming an adhesion layer on a surface of said insulating layer by treating said surface of said insulating layer with a gas; and,
 - forming a first passivation layer upon said adhesion layer, said first passivation layer and said gas including at least one common chemical element.
2. The method of claim 1 further comprising forming a second passivation layer upon said first passivation layer.
3. The method of claim 1 wherein said insulating layer includes silicon dioxide.
4. The method of claim 1 wherein said gas reacts with said surface of said insulating layer.
5. The method of claim 1, wherein said gas includes nitrous oxide (N_2O).
6. The method of claim 1, wherein said gas includes one of oxygen and nitrogen (N), and oxygen and ammonia (NH_3), and oxygen and argon (Ar), and ozone (O_3) and argon.
7. The method of claim 5, wherein said adhesion layer includes silicon oxynitride ($Si_xO_yN_z$).

1 8. The method of claim 7, wherein said first passivation layer includes
2 silicon nitride.

1 9. The method of claim 1, wherein said first passivation layer is deposited
2 upon said adhesion layer by way of a process of plasma enhanced chemical vapor
3 deposition (PECVD).

1 10. The method of claim 8, wherein said at least one chemical element
2 includes nitrogen (N).

1 11. The method of claim 2 wherein said second passivation layer includes
2 polyimide.

1 12. A method of passivating an integrated circuit (IC), the method
2 comprising:

3 forming an oxide layer on said IC;

4 forming an adhesion layer on a surface of said oxide layer by treating
5 said surface of said oxide layer with nitrous oxide gas; and

6 forming a first passivation layer of silicon nitride upon said adhesion
7 layer.

1 13. The method of claim 12 further comprising forming a second
2 passivation layer upon said first passivation layer.

1 14. The method of claim 12, wherein said adhesion layer includes silicon
2 oxynitride.

1 15. The method of claim 12, wherein said first passivation layer of silicon
2 nitride is deposited upon said adhesion layer by way of a process of plasma enhanced
3 chemical vapor deposition (PECVD).

1 16. The method of claim 13, wherein said second passivation layer
2 includes polyimide.

1 17. An integrated circuit (IC) comprising:
2 an insulating layer;
3 an adhesion layer formed over said insulating layer; and,
4 a first passivation layer formed on said adhesion layer, said first
5 passivation layer and said adhesion layer including at least one common chemical
6 element.

1 18. The integrated circuit of claim 17 further comprising a second
2 passivation layer formed upon said first passivation layer.

1 19. The integrated circuit of claim 17 wherein said insulating layer
2 includes silicon dioxide (SiO₂).

1 20. The integrated circuit of claim 17 wherein said adhesion layer includes
2 silicon oxynitride.

1 21. The integrated circuit of claim 17 wherein said first passivation layer
2 includes silicon nitride (Si₃N₄).

1 22. The integrated circuit of claim 18 wherein said second passivation layer
2 includes polyimide.

1 23. An integrated circuit comprising:
2 a silicon dioxide insulating layer;
3 a silicon oxynitride adhesion layer formed over said silicon dioxide
4 insulating layer; and,

5 a silicon nitride hard passivation layer formed on said silicon
6 oxynitride adhesion layer.

1 24. The integrated circuit passivation layer of claim 23 further comprising
2 a photodefinable polyimide soft passivation layer formed on said silicon nitride
3 hard passivation layer.

1 25. A method of passivating a trench on a semiconductor substrate,
2 comprising the steps of:
3 forming at least one trench;
4 forming an insulating layer on said at least one trench;
5 forming an adhesion layer on a surface of said insulating layer by treating said
6 surface of said insulating layer with a gas; and,
7 forming a first passivation layer upon said adhesion layer, said first
passivation layer and said gas including at least one common chemical element.

1 26. The method of claim 25, wherein said gas reacts with said surface of
2 said insulating layer.

1 27. The method of claim 25, wherein said gas includes nitrous oxide
2 (N₂O).

1 28. A method of passivating spacers, the method comprising the steps of:
2 forming at least one spacer;
3 forming an insulating layer on said at least one spacer;
4 forming an adhesion layer on a surface of said insulating layer by treating said
5 surface of said insulating layer with a gas; and,
6 forming a first passivation layer upon said adhesion layer, said first
7 passivation layer and said gas including at least one common chemical element.

1 29. The method of claim 28, wherein said gas reacts with said surface of
2 said insulating layer.

1 30. The method of claim 28, wherein said gas includes nitrous oxide
2 (N₂O).

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